

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

| | | |
|---|---|--|
| Applicant's or agent's file reference B0046W0 | FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. | |
| International application No. PCT/EP 00/09137 | International filing date (day/month/year) 18/09/2000 | (Earliest) Priority Date (day/month/year) 16/09/1999 |
| Applicant WARNER-LAMBERT COMPANY et al. | | |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 7 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☒ contained in the international application in written form.

☒ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

SECRETED SOLUBLE ALPHA2DELTA-2, ALPHA2DELTA-3 OR ALPHA2DELTA-4 CALCIUM CHANNEL SUBUNIT POLYPEPTIDES AND SCREENING ASSAYS USING SAME

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☐ None of the figures.

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International application No.
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Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-20 (in part); 21-23; 26 (in part); 35-53 (in part).

Calcium channel alpha2delta subunit having aminoacid sequence of Seq.Id.No.20 of the sequence listing; derivate subunits having sequence as set forth in Seq.Id.Nos.4-6; kits and methods of screening assays using the same.

2. Claims: 1-20 (in part); 24-26 (in part); 35-53 (in part)

Calcium channel alpha2delta subunit having aminoacid sequence of Seq.Id.No.21 of the sequence listing; derivate subunits having sequence as set forth in Seq.Id.Nos.10-12; kits and methods of screening assays using the same.

3. Claims: 1-20 (in part); 27-29; 35-53 (in part)

Calcium channel alpha2delta subunit having aminoacid sequences of Seq.Id.Nos.53-55, kits and methods of screening assays using the same.

4. Claims: 1-20 (in part); 30 (in part) ; 31-53 (in part).

Calcium channel alpha2delta subunit having aminoacid sequence of Seq.Id.No.44 of the sequence listing; derivate subunits having sequence as set forth in Seq.Id.Nos.41-43; kits and methods of screening assays using the same.

5. Claims: 1-20 (in part); 31-53 (in part).

Calcium channel alpha2delta subunit having aminoacid sequence of Seq.Id.No.33 of the sequence listing; derivate subunits having sequence as set forth in Seq.Id.Nos.34-36; kits and methods of screening assays using the same.

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C07K14/47

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, EPO-Internal, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------------------|
| A | <p>BROWN J P ET AL: "CLONING AND DELETION MUTAGENESIS OF THE ALPHA 2 DELTA CALCIUM CHANNEL SUBUNIT FROM PORCINE CEREBRAL CORTEX" JOURNAL OF BIOLOGICAL CHEMISTRY, US, AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS, BALTIMORE, MD, vol. 273, no. 39, 1998, pages 25458-25465, XP000887190 ISSN: 0021-9258 the whole document</p> <p style="text-align: center;">--- -/--</p> | <p>1-23, 26-29, 35-53</p> |

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- * & * document member of the same patent family

Date of the actual completion of the international search

19 July 2001

Date of mailing of the international search report

26. 7. 011

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INTERNATIONAL SEARCH REPORT

International Application No

T/EP 00/09137

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| A | KLUGBAUER N ET AL: "MOLECULAR DIVERSITY OF THE CALCIUM CHANNEL ALPHA 2 DELTA SUBUNIT" JOURNAL OF NEUROSCIENCE,US,NEW YORK, NY, vol. 19, no. 2, 15 January 1999 (1999-01-15), pages 684-691, XP000886459 ISSN: 0270-6474 the whole document | 1-29, 35-53 |
| A | WALKER D ET AL: "SUBUNIT INTERACTION SITES IN VOLTAGE-DEPENDENT CA 2+ CHANNELS: ROLE IN CHANNEL FUNCTION" TRENDS IN NEUROSCIENCE,NL,ELSEVIER, AMSTERDAM, vol. 21, no. 4, 1998, pages 148-154, XP000887176 ISSN: 0166-2236 the whole document | 1-23,26, 35-53 |
| A | DISSANAYAKE V U K ET AL: "Spermine modulation of specific (3H)-gabapentin binding to the detergent-solubilized porcine cerebral cortex alpha-2-delta calcium channel subunit." BRITISH JOURNAL OF PHARMACOLOGY, vol. 120, no. 5, 1997, pages 833-840, XP000989667 ISSN: 0007-1188 the whole document | 1-23,26, 35-53 |
| A | GEE NICOLAS S ET AL: "The novel anticonvulsant drug, gabapentin (neurontin), binds to alpha-2-delta subunit of a calcium channel." JOURNAL OF BIOLOGICAL CHEMISTRY, vol. 271, no. 10, 1996, pages 5768-5776, XP002022221 ISSN: 0021-9258 the whole document | 1-23,26, 35-53 |
| A | US 5 792 846 A (HARPOLD MICHAEL M ET AL) 11 August 1998 (1998-08-11) column 4 column 283 -column 288 | 1-23,26, 31-53 |
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International Application No

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------|
| A | BRYANS J S ET AL: "Investigation into the preferred conformation of Gabapentin for interaction with its binding site on the alpha2delta subunit of a calcium channel" BIOORGANIC & MEDICINAL CHEMISTRY LETTERS, GB, OXFORD, vol. 7, no. 19, 7 October 1997 (1997-10-07), pages 2481-2484, XP004136469 ISSN: 0960-894X the whole document | 1-23, 26, 35-53 |
| A | BROWN JASON P ET AL: "Isolation of the (3H)gabapentin-binding protein/alpha2delta Ca2+ channel subunit from porcine brain: Development of a radioligand binding assay for alpha2delta subunits using (3H)leucine." ANALYTICAL BIOCHEMISTRY, vol. 255, no. 2, 15 January 1998 (1998-01-15), pages 236-243, XP000989588 ISSN: 0003-2697 the whole document | 1-23, 26, 35-53 |
| X,P | WO 00 20450 A (WARNER LAMBERT CO ; MOLDOVER BRIAN (US); JOHNS MARGARET ANN (US); O) 13 April 2000 (2000-04-13) abstract sequence 22 page 66 claims | 24-26, 35-53 |
| E | WO 01 20336 A (BERTELLI FRANCOIS ; BROWN JASON PETER (GB); SUMAN CHAUHAN NIRMALA ()) 22 March 2001 (2001-03-22) abstract seqs. 22, 24, 53 claims | 1-20, 24-26, 30-53 |
| A | WILLIAMS M E ET AL: "STRUCTURE AND FUNCTIONAL EXPRESSION OF ALPHA1, ALPHA2, AND BETA SUBUNITS OF A NOVEL HUMAN NEURONAL CALCIUM CHANNEL SUBTYPE" NEURON, US, CAMBRIDGE, MA, vol. 8, January 1992 (1992-01), pages 71-84, XP000886416 the whole document | 1-20, 31-53 |

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International Application No

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------------------|
| T | <p>BARCLAY JANE ET AL: "Genomic organization of the mouse and human alpha2delta2 voltage-dependent calcium channel subunit genes."</p> <p>MAMMALIAN GENOME, vol. 11, no. 12, December 2000 (2000-12), pages 1142-1144, XP002940593 ISSN: 0938-8990 the whole document</p> <p>-----</p> | <p>1-20, 27-29, 35-53</p> |

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International Application No

T/EP 00/09137

| Patent document cited in search report | | Publication date | Patent family member(s) | Publication date |
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